of producing disease. In a country like this which might be considered as semi-tropical, where frost seldom and snow never comes, the septic tank properly constructed and managed, offers a possible solution, probably not much, if any, more expensive than the present sewage systems, with the advantage that the sewage when it reaches water courses or the ocean can produce no disease of any kind.

It may seem to some that some of the statements made above, are overdrawn and improbable, and that it is not necessary to take the precautions recommended. In reply it can be stated that it is true that all cases of amebic dysentery do not die of the disease, nor do all cases have abscess of the liver, but these facts do remain, the vitality of anyone having dysentery is so lowered as to make the patient very susceptible to intercurrent disease, particularly tuberculosis. We find tubercular processes quite frequently at autopsies on dysenterics. Further, should the disease get a firm foothold it will be as difficult to eradicate as is tuberculosis. Personally, if quick results were desired, I would much prefer to handle an epidemic of Asiatic cholera, plague or smallpox, or any two of these, than to attempt to eradicate amebic dysentery in anything like a reasonable time.

LATENT TUBERCULOSIS: ITS SYMPTOMS, TREATMENT AND PROGNOSIS.*

By DR. MAX ROTHSCHILD, San Francisco.

The attention of the general practitioner ought to be called to a complex of symptoms which is not generally well enough known,—the latent tuberculosis. It might be advisable to give first the history of a number of typical cases that have been under the writer's observation during the last 6 or 8 years, then to give a résumé of these and other similar cases that have been under treatment and afterwards to give a short description of the mode of treatment which seems most efficacious.

Case 1: Miss A., San Francisco. Stenographer, aged 24. One cousin and one aunt died of tuberculosis. Patient herself has never been sick with the exception of children's diseases. Menstruation regular with normal loss of blood. Patient complains of tired feeling and general exhaustion which appears even after very light work. It is the greatest effort for her to perform the duties of her position. She wakes in the morning without feeling rested or refreshed and is so tired in the evening that she can scarcely wait to get through with her dinner so that she may get to bed. No expectoration, no cough, no night sweats, no shortness of breath.

P. C. Patient looks rather delicate, has deep, dark rings under her eyes. The mucous membranes look rather pale. She is well developed, heart normal, lungs normal with the exception of some interrupted breathing in right and left lower lobes. Liver, spleen and kidneys normal. Digestion normal. Blood shows about 80% hemoglobin, about 4,200,000 reds and a normal amount of white cells. Pirquet and Moro reactions both positive. While the temperature of the patient is usually normal and most of the time sub-normal in the early morning, patient had a temperature of 99.8° about 24 hours after an intravenous injection of 1-3 mgr. of Koch's old tuberculin.

Diagnosis, latent tuberculosis.

Treatment, Blaud's pills internally, intravenous injections of tuberculin and atoxyl twice weekly beginning with 1-5 mgr. of tuberculin and increasing to 1 mgr.

After about three months' treatments patient had gained 18 pounds, general condition much improved, the fatigue having entirely disappeared.

Case 2: Mr. B., Portland. Real estate dealer. Thirty years of age. Referred by Dr. Weeks. Father and sister died of tuberculosis. Best weight of patient was 162 pounds. In the last 3 or 4 years he has gradually lost in weight, now weighing 140 pounds. Patient has no outspoken symptoms of any kind. He "just feels tired and lazy," as he expresses it, with no desire to work and great exhaustion after any efforts of any kind, physical as well as mental.

Examination shows a well built man with rather pale mucous membranes. With the exception of harsh expiratory breathing over the right apex and a light anemic condition (homoglobin about 80 to 85%) patient appears to be perfectly normal. Moro reaction positive. Twenty hours after an injection of 1-3 mgr. of tuberculin intravenously, temperature 100.2°.

Diagnosis, latent tuberculosis.

Treatment consisted, as in all similar cases, of intravenous injections of tuberculin and atoxyl. Patient gained 20 pounds in four months, then he returned to Portland where he has been working hard ever since. He is perfectly well and enjoying better health than he has for many years.

All cases of latent tuberculosis that have been treated by me, altogether 22 in the last 6 years, showed about the same picture and reacted in the same way to treatment. The symptoms in all cases are very much alike. The prominent features are,—

1st, tuberculosis hereditary in the family.

2nd, exhaustion more or less pronounced after light physical efforts of any kind without any other apparent cause.

3rd, positive Moro reaction, or reaction after an injection of tuberculin of sufficient strength.

4th, light anemic condition. Sometimes interrupted breathing or harshness on ausculation of the whispering voice over some part of the lung.

5th, patients have either lost in weight or are far below the weight which persons of their respective sizes should normally have.

In most cases of latent tuberculosis, the Moro reaction is sufficient for diagnostic purposes and if this reaction is positive an injection of tuberculin will not be necessary for diagnostic purposes. The Pirquet gives the same results as the Moro reaction. It is most interesting that in cases of real latent tuberculosis, the Calmette reaction is usually negative. If this reaction should be positive we have usually to do with a case of active tuberculosis, and so it seems to be possible to draw a line, with the help of these reactions, between the cases of latent tuberculosis and the cases of incipient tuberculosis. My results harmonize with those published by Wolff-Eisner; however, these reactions have to be studied a good deal longer before positive facts can be stated in this respect.

The effect of tuberculin treatment in cases of latent tuberculosis resembles very much the effect

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of a good tonic. I have given to some patients, who have suffered from a light anemia without the hereditary element of tuberculosis in the family history, and without a positive Moro reaction, or a reaction after an injection of tuberculin, tuberculin intravenously, but there was no result from the treatment and in some of my cases of latent tuberculosis I have given for a while intravenous injections of atoxyl alone, without a marked improvement which became very evident as soon as I had added tuberculin to the atoxyl. It is needless to say that in the treatment of latent tuberculosis proper food and a proper mode of living are important. The patients have to combine rest with a certain amount of exercise in the open air. They ought to sleep outside or use a window tent. The best and quickest results are obtained if the patients are treated exactly as though they were suffering from an incipient tuberculosis; only the amount of tuberculin should be larger and should be increased more rapidly.

In regard to the prognosis of latent tuberculosis, it is possible that with a proper mode of living and good care, the sickness may disappear. On the other hand, and this is usually the case, an active tuberculosis develops sooner or later and then of course, it means a harder fight for patient as well as for the physician. The Moro ointment ought to be on hand in the office of every physician, the test is so simple and can be made so easily. Since the reading of a paper on this subject by Dr. Alderson and myself at the November meeting of last year of the San Francisco County Medical Society, a great many publications on the value of the Moro reaction have appeared, and all writers recognize now the importance of this test.

So, if a patient comes for examination with the symptoms mentioned, especially with an element of hereditary tuberculosis in the history, a Moro test ought to be made. With the exception of one single case that was observed by Dr. McClennahan of Belmont, I have not heard or read of any case in which general symptoms appeared after a Moro reaction. The method is practically harmless. It is needless to state that the diagnosis of latent tuberculosis is of the greatest importance, as well for the individual in question as for the community at large.

Discussion.

Dr. Harry E. Alderson, San Francisco. Regarding the query made by the gentleman who last spoke in discussing Dr. Rothschild's most interesting paper, I wish to say that unsatisfactory results with the tuberculin salve may be due to various causes. The salve must be fresh and it must be kept cool. It is well to keep it in a refrigerator. After six weeks it loses much of its effectiveness. That prepared by Mulford & Co. and the Cutter Laboratory have been very satisfactory. Any reliable pharmacist will make a good tuberculin salve. One difficulty is that the so-called "anhydrous lanolin" as dispensed by different druggists, varies greatly in quality. It must be a good, pure preparation, and the Koch's old tuberculin must be thoroughly rubbed up in it,—at least one-half hour's work being necessary. As for recognizing the skin phenomenon, mistakes are made in overlooking slight reactions. Often a reaction will consist of but two or three papules, and these are not always easy to recognize. The individual papule is usually slightly larger than a pin head, acuminate and pale and often a lanugo hair can be seen at its apex. Sooner or later a tiny crust usually appears on its summit. At times the papules are larger, more rounded and edematous, resembling small urticarial lesions. The reaction appears within forty-eight hours and sometimes before thirty-six hours. Sometimes it is quite lively and consists of one hundred or so papules on an inflammatory base. The lesions gradually fade away, passing through the various shades of yellow in about ten days but occasionally the process lasts twice as long. Sometimes it results finally in marked desquamation.

A DOSIMETRIC METHOD OF ANESTHESIA BY INHALATION.*

By CARL R. KRONE, M. D., Oakland.

The first efforts at dosimetry in inhalation anesthesia were made by Dr. Oscar H. Allis of Philadelphia in 1874 when he described his ether inhaler in the *Philadelphia Medical Times*. Still clearer did he establish his standpoint in an article on Anesthetics and Anesthesia which appeared in 1891 in the Cyclopedia of the Diseases of Children, edited by John M. Keating, M. D., first edition, third volume, pages 915 f. f. I quote: "When I administer chloroform and accomplish the desired effect in four minutes, when I consider that in this time there have probably been but sixty full respirations and that I have used but sixty minims of chloroform, then it is that I realize the value of a minim of the agent;—a single minim properly administered has definite anesthetic value." So far Allis.

In 1891 when I was in, and just fresh from, medical college the article quoted made so deep an impression on me that I determined to follow its teachings. I strenuously adhered to the principles laid down by Allis in the following eighteen years of the practice of inhalation anesthesia. I found it not a simple matter to determine the "definite anesthetic value of a minim of chloroform."

A dosimetric method of general anesthesia by inhalation must fill the following requirements:

1. This method must offer a means by which chloroform and ether can be subdivided into smallest parts without loss from evaporation. The subdivision of the agent must be under ready control so that the smallest convenient parts (drops) can be exhibited at accurate time intervals.

2. Chloroform and ether can be inhaled only in the form of vapor suitably mixed with air; therefore means for evaporation and for admixture of air or oxygen must be introduced. The method must provide apparatus whereby the vapors derived from definite quantities of the liquids may be transferred into the airpassages without loss.

3. A scale for ascertaining progressive degrees of anesthesia must be arranged.

4. Absolute accuracy in the foregoing requirements being impossible, approximate results can be

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